UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/694,871	10/28/2003	Raymond O. Butler JR.	DP-309382	4104

7590 05/18/2004

JIMMY L. FUNKE
DELPHI TECHNOLOGIES, INC.
Legal Staff, Mail Code: 480-410-202
P.O. Box 5052
Troy, MI 48007-5052

EXAMINER	
BELLAMY, TAMIKO D	

ART UNIT	PAPER NUMBER
2856	

DATE MAILED: 05/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/694,871	Applicant(s) BUTLER ET AL.
	Examiner Tamiko D. Bellamy	Art Unit 2856

-- The MAILING DATE of this communication appears on the cover sheet with the correspond nce address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *10/28/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 4, 13 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Fawcett et al. (2,304, 812).

Re to claim 1, Fawcett et al. discloses a shell (6). As depicted in figs. 1 and 5, Fawcett et al. also discloses a pressure sense assembly (10a) having a base plate (e.g., steel base 10) having a body portion and a strain gauge (10).

Re to claims 13 and 15, as depicted in figs. 1 and 5 Fawcett et al. discloses a base plate (e.g., steel base 18) that has a planer portions and is curved to the outer surface of a shell (6).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 2-10, 14, and 16-20, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fawcett et al. (2,304, 812).

Re to claims 2 and 17, as depicted in figs. 1 and 5, Fawcett et al. also discloses a pressure sense assembly (10a) having a body portion. Fawcett et al. does not specifically disclose a base plate having a body portion that includes first and second tabs affixed to a shell. However, the changing the shape of a base plate to include tabs that affix to a shell is a design consideration clearly in the preview of one having ordinary skill in the art. Therefore, to employ Fawcett et al. on a body portion having first and second tabs on would have been obvious to one of ordinary skill in the art at the time of the invention since this reference explicitly teaches its use on a spark plug that in includes a strain gauge mounted on a base plate and affixed to the shell.

Re to claim 3, Fawcett et al. discloses a spark plug for use in an internal combustion engine.

Re to claim 4, Fawcett et al. discloses a spark plug for use in an internal combustion engine. While Fawcett et al. does not specifically disclose the use of a glow plug in a diesel combustion engine. The intended use of the apparatus would function the same for a glow plug. Therefore, to employ Fawcett et al. on a glow plug would have been obvious to one of ordinary skill in the art at the time of the invention since this reference explicitly teaches its use on a spark plug that in includes a strain gauge mounted on a base plate and affixed to the shell.

Re to claims 5 and 16, Fawcett et al. discloses in Fig. 1 a second end of a central electrode (e.g., central electrode 8). The device of Fawcett et al. uses a shell (6) that is secured to insulator (4) (pg. 4, lines 21-22). As depicted in Fig. 1, the device of Fawcett et al. discloses a central electrode having a first end, and a second electrode spaced apart

from the second end of a central electrode (e.g., central electrode 8). Finally, Fawcett et al. discloses rigidly securing a strain gauge (10) to the outer surface of the metal shell (6) and measuring the strain of the shell (pg. 1, lines 31-33). The strain gauge provides an indication of cylinder pressure (pg. 2, lines 1-4).

Re to claims 6-9, and 18-20, Fawcett et al. discloses rigidly securing a strain gauge (10) to the outer surface of the metal shell (6). While Fawcett et al. does not specifically disclose a plurality of strain gauges place on the first and second longitudinal axes, and disposed circumferentially. The duplication of and element, and the changing in shape of an element, is a design consideration clearly in the preview of one having ordinary skill in the art. Therefore, to employ Fawcett et al. on a plurality of strain gauges, disposed circumferentially would have been obvious to one of ordinary skill in the art at the time of the invention since this reference explicitly teaches its use on a spark plug that in includes a strain gauge mounted on a base plate and affixed to the shell.

Re to claim 10, Fawcett et al. also discloses a pressure sense assembly (10a) having a base plate (e.g., steel base 10).

Re to claim 14, Fawcett et al. discloses a base plate (e.g., steel base 10). While Fawcett et al. does not specifically disclose the base plate including a hole, the change in shape of an element is a design consideration clearly in the preview of one having ordinary skill in the art. Therefore, to employ Fawcett et al. on a base plate having a hole would have been obvious to one of ordinary skill in the art at the time of the invention since this reference explicitly teaches its use on a spark plug that in includes a strain gauge mounted on a base plate and affixed to the shell.

4. Claims 11, 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fawcett et al. (2,304,812) in view of Uchiyama et al. (JP 59162431A).

Re to claim 11, Fawcett et al. discloses a pressure sensor (e.g., strain gauge 10). Fawcett et al. pressure sensor coupled to a bridge circuit. Uchiyama et al. discloses pressure measuring strain gage that is formed by the bridge circuit. Therefore, to modify Fawcett et al. by employing a bridge circuit would have been obvious to one of ordinary skill in the art at the time of the invention since Uchiyama et al. teaches a pressure detecting circuit having theses design characteristics. The skilled artisan would be motivated to combine the teachings of Fawcett et al. and Uchiyama et al. since Fawcett et al. states that his invention is applicable to a pressure sensing spark plug and Uchiyama et al. is directed to a pressure sensing circuit used in a internal combustion engine.

Re to claim 21, Fawcett et al. discloses a strain gauge (10). Fawcett et al. does not specifically disclose a bridge circuit coupled to a plurality of strain gauges. However, the duplication of a strain gauge is a design consideration clearly in the preview of one having ordinary skill in the art. Uchiyama et al. discloses pressure measuring strain gage that is formed by the bridge circuit. Therefore, to modify Fawcett et al. by employing a plurality of strain gauges and a bridge circuit would have been obvious to one of ordinary skill in the art at the time of the invention since Uchiyama et al. teaches a pressure detecting circuit having theses design characteristics. The skilled artisan would be motivated to combine the teachings of Fawcett et al. and Uchiyama et al. since Fawcett et

al. states that his invention is applicable to a pressure sensing spark plug and Uchiyama et al. is directed to a pressure sensing circuit used in a internal combustion engine.

Re to claim 22, Fawcett et al. also discloses a pressure sense assembly (10a) having a base plate (e.g., steel base 10).

Re to claim 23, Fawcett et al. discloses a first end of a central conductor (e.g., central electrode 8). Fawcett et al. lacks the detail of a pressure signal coupled to a bridge circuit. Uchiyama et al. discloses pressure measuring strain gage that is formed by the bridge circuit. Therefore, to modify Fawcett et al. by employing a bridge circuit would have been obvious to one of ordinary skill in the art at the time of the invention since Uchiyama et al. teaches a pressure detecting circuit having theses design characteristics. The skilled artisan would be motivated to combine the teachings of Fawcett et al. and Uchiyama et al. since Fawcett et al. states that his invention is applicable to a pressure sensing spark plug and Uchiyama et al. is directed to a pressure sensing circuit used in a internal combustion engine.

5. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fawcett et al. (2,304, 812) in view of Boyer (6,119, 667).

Re to claim 12, as depicted in Fig. 1, the device of Fawcett et al. discloses a central conductor (e.g., central electrode 8) having a first end. Fawcett et al. lacks the detail of an ignition coil coupled to the first end of the central conductor to generate a high voltage. As depicted in Fig. 1, Boyer et al. discloses an ignition coil that includes a high voltage boot (14). Therefore, to use Fawcett et al. by employing an ignition coil configured to generate a high voltage would have been obvious to one of ordinary skill in

the art at the time of the invention since Boyer et al. teaches uses an ignition coil having theses design characteristics. The skilled artisan would be motivated to combine the teachings of Fawcett et al. and Boyer et al. since Fawcett et al. states that his invention is applicable to pressure sensing spark plug and Boyer et al. is directed to integrated spark plug having a pressure sensor.

6. Claims 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fawcett et al. (2,304,812) in view of Uchiyama et al. (JP 59162431A) as applied to claims 11, 21-23 above, and further in view of Boyer (6,119, 667).

Re to claim 24, as depicted in Fig. 1, the combination of Fawcett et al. and Uchiyama et al. discloses a central conductor (e.g., central electrode 8) having a first end. The combination of Fawcett et al. and Uchiyama et al. Fawcett et al. lacks the detail of an ignition coil coupled to the first end of the central conductor to generate a high voltage. As depicted in Fig. 1, Boyer et al. discloses an ignition coil that includes a high voltage boot (14). Therefore, to employ the combination of Fawcett et al. and Uchiyama et al. on an ignition coil configured to generate a high voltage would have been obvious to one of ordinary skill in the art at the time of the invention since Boyer et al. teaches uses an ignition coil having theses design characteristics. The skilled artisan would be motivated to combine the teachings of Fawcett et al. and Boyer et al. since Fawcett et al. states that his invention is applicable to pressure sensing spark plug and Boyer et al. is directed to integrated spark plug having a pressure sensor.

Re to claim 25, the combination of Fawcett et al. and Uchiyama et al. discloses a base plate (e.g., steel base 18) that has a planer portions and is curved to the outer surface of a shell (6).

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tamiko D. Bellamy whose telephone number is (571) 272-2190. The examiner can normally be reached on Mon., Tues., & Fri. 6:30 AM to 2:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tamiko Bellamy
T.B.
May 11, 2004

HEZRON WILLIAMS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800